Ministry of
Transportation and
Communications

MOBILE SATELLITE SERVICE IN CANADA

ONTARIO COMMENTS

January 7, 1985

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PROPOSALS FOR MOBILE SATELLITE SERVICE

COMMENTS OF THE PROVINCE OF ONTARIO

TO THE FEDERAL DEPARTMENT OF COMMUNICATIONS

IN RESPONSE TO NOTICE NO. DGTP-007-84

COMMUNICATIONS DIVISION
January 7, 1985

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Background

The Ministry of Transportation and Communications, on behalf of the Government of Ontario welcomes this opportunity to comment on the policy proposals of the federal Department of Communications (DOC) for mobile satellite service.

Because of the geography of Ontario, large areas of the province in Northern Ontario cannot be served well with existing terrestrially based methods of communications. Ontario, therefore, regards the concept of mobile satellite service as offering a unique opportunity to improve northern Canadian communications not offered by any alternative service or technology.

The issuing of the Discussion Paper by the federal Department of Communications to which these comments respond is the most recent step in the MSAT project development. Beginning in 1980, the DOC, initiated studies to assess needs, economic and technical feasibility, and to develop the concept of the mobile service satellite. Radio frequency allocation for MSAT has been identified as an issue and Ontario has offered comments on the question of assigment of additional spectrum for MSAT in the UHF and L Bands.[1]

Ontario has also participated as a member of the MSAT DOC/Provincial Govermment working group during the Project Definition Phase of the MSAT program. Consultation with the various Ministries of the Ontario Government, has shown significant interest in the potential of MSAT to improve government services, such as fire fighting; nuclear emergency response; environmental emergency response; and, the coordination of various dispersed survey, patrol and inspection activities.

DOC decided in October 1982, to reorient the MSAT program from a government demonstration program to a commercial venture.[2] In addition, the DOC has also signed an arrangement with NASA to support cooperation between Canada and U.S. authorities and Telesat.

The Discussion paper also notes that neither Telesat nor the Canadian federal government are committed to continue

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1. In response to "Spectrum Reallocation Relating to the Mobile Satellite Service" Canada Gazette, Part 1 Notice No. DGTP-003-84/DGTR-014-84 May 19, 1984.

2. P. 2, Discussion Paper "Proposals for Mobile Satellite Service" DGTP-007-84 August 31, 1984.

the MSAT program beyond the current phase of Project Definition. Questions relating to the financial viability of MSAT, and the intentions of the federal government to continue with the program are not explicitly subjects for comment in this Notice. Nevertheless, Ontario believes that they are of increasing importance and that they are appropriate subjects for public discussion.

The business plan of Telesat for MSAT could be most useful to facilitate comment on the economic viability of MSAT, as well as the issues raised by the DOC in its Discussion Paper. The material provided by Telesat, as a supplement to the Notice, however, leaves a number of questions unanswered.

1. The Use of MSAT for Non-Mobile and "Emergency" Services

The Discussion Paper suggests that "eventual demand for truly mobile services will be such as to fully utilize the frequency spectrum available for the first generation system" (p. 9). It is argued, as a result that some restrictions may be warranted on the initial utilization of MSAT by mobile satellite remote telephone services, paging service, data acquisition and control service and data transmission.

Ontario has collected a considerable amount of information from several Ministries indicating a potentially broad interest on mobile satellite services to support their normal activities, improve services and respond to emergency situations more flexibly and rapidly.

Ontario is also mindful that 20,000 people in Northern Ontario are not served by telephone services. Radio telephone service for these people is markedly inferior to the quality of services that could be offered with mobile satellite remote telephone services.

These two categories of services are important inasmuch as the improvements offered by satellite service over conventional radio are significant and services in question are of particular concern to Ontario.

If MSAT, however, is to be an effective commercial proposition service priorities must be considered with due regard for their potential impact on the growth of revenue producing traffic.

There is some uncertainty about both the level and rate of growth of traffic likely to be achieved by MSAT. It is possible that capacity constraints will be reached early, and that sufficient profits will be generated to repay the anticipated losses in the first 5 years. Nevertheless, if growth rates and eventual market penetration by MSAT services are less than anticipated, the priorities put forward by the Department of Communications could impair the commercial viability of MSAT by discouraging low priority service users from using MSAT.

Ontario would be best served by an effective commercial system. Because of the commercial risk inherent in the project, it is not clear that the priorities for the use of MSAT for Non-Mobile and "Emergency" Services, suggested by the Department in its Discussion Paper are in Ontario's interest.

2. Radio Station Frequency Licensing

The question is raised by the Department of Communications whether the Department or Telesat should be directly responsible for suballocation of the MSAT frequency spectrum between end-user service categories. In addition, there is also a question whether or not dedicated channels should be assigned to specific services.

These questions have been related to a concern that slow initial growth of some new satellite services may necessitate designation of a minimum amount of spectrum for each of the proposed end user services. It appears to be implied that Telesat Canada may manage the allocation of subfrequencies more efficiently in response to the vagaries of market demand than would the Department. This may well be the case, if Telesat Canada is given such flexibility to allocate channels to services as the demand arises and without undue delay.

An important concern to Ontario is that nondiscriminatory access by end-users to spectrum be ensured. Inasmuch as Telesat Canada has a commercial agreement with Telecom Canada and has a monopoly of domestic satellite services in Canada, Telesat ought not to be allowed to manage the allocation of subfrequencies among user categories without appropriate regulatory scrutiny.

If Telesat is to manage subfrequency allocations, the company should be required to submit detailed plans to the CRTC for public comment and Commission approval, and be subject to regular public review by the Commission.

Dedication of channels by the Department of Communications to particular categories of service-users does not at this time appear to be beneficial. The most likely result of dedication of channels, given the unpredictability of demand growth, would be lower satellite "fill", inferior economics for services, and higher prices to users.

It recommended, therefore, that subject to the requirement that regulatory process should be adequate to guarantee non-discriminatory access by users, the allocation of subfrequencies should be managed to give the greatest possible flexibility and responsiveness to market conditions.

3. Compatibility among MSAT Services and Equipment

The Department has proposed that all MSAT services should be available on a compatible basis throughout Canada.

Several points are raised in the Discussion Paper. First, an agreement with American authorities is expected to standardize mobile satellite equipment across North America. Second, equipment compatibility between MSAT services such as mobile radio and mobile telephone is considered to be feasible. Satellite mobile radio and terrestrial mobile radio, however, would require interfaces to achieve interoperability, due to differences in bandwidth, modulation and protocol. Cellular radio and terrestrial mobile telephone (at VHF and UHF frequencies) are not compatible with satellite mobile telephone except via the public switched telephone network (PSTN).

From the viewpoint of Ontario, compatibility among services and equipment is likely to be important to the success of MSAT as a commercially viable venture. If MSAT services are to be attractive to users, the cost of equipment will have to be kept low in relation to its perceived usefulness. To the extent that the same equipment can be used in both Canada and the United States for satellite services, producer competition will be more intense, production runs will be longer, and prices are likely to be lower to purchasers as a result.

Second, it is likely that many of the potential users of Mobile Satellite services will already be users of terrestrial mobile radio and/or mobile telephone services. For such users, compatibility of MSAT services and equipment with existing terrestrial services may be of considerable advantage, if interoperating equipment can be manufactured at a reasonable cost.

To the extent that integrated mobile radio services may become commercially feasible the radio common carriers would have a natural and reasonable interest in being allowed to provide both conventional and satellite mobile radio services.

It is recommended therefore, that the Department consider means to facilitate integrated MSAT-terrestrial mobile services and equipment, if the equipment can be manufactured at reasonable cost.

It is also recommended that the Department consider the potential for encouraging the growth of competitive radio common carriers via integrated satellite-terrestrial mobile radio services.

4. Mobile Satellite Radio Service (MSRS)

Mobile satellite radio service is seen, on the basis of preliminary market surveys, as likely to use 60 to 80% of total MSAT air-time traffic.

From the view expressed in the Discussion Paper, it appears that the Department is generally satisfied that the regulatory-policy infrastructure currently applicable to terrestrial mobile radio services would be appropriate for Mobile Satellite Radio Service.

The questions raised for comment are:

Which entities should be authorized to contract with Telesat for access to MSAT services and capacity, including recognized telecommunications carriers, RCC's, and private users?

What contractual requirements that should apply?

In Ontario's view the following considerations are relevant. First, preliminary market research suggests that integrated services are more valuable to many users. As a result, conditions that might tend to limit the interoperability of systems could reduce the market for MSRS and affect financial viability.

Second, large and small users are likely to have quite different needs which may be best satisfied by different marketing arrangements, different pricing approaches and different vendors.

Third, competition between Telesat and the RCC's is most likely to result in innovative services and effective responses to user needs.

Ontario recommends, therefore, that

- Telesat should be allowed to sell directly to users according a variety of marketing arrangements providing that its competitive rates are compensatory and that its terms and conditions of sale are just, reasonable and nondiscriminatory.
- RCC's should be allowed to market satellite services directly to users.
- Intercarrier competition and integrated mobile services should be supported by the Department.

5. Mobile Satellite Telephone Service (MSTS)

Three scenarios have been suggested for mobile satellite telephone service:

I. A Telesat monopoly, with Telesat billing all calls originating from MSTS customers and settling with the telephone companies for PSTN originated calls.

II. A telephone company monopoly, where all MSTS customers are subscribers to some designated telephone company.

III. One or more service providers, such as Cantel or RCC's compete with the telephone companies and/or Telesat.

Of a number of questions that can be raised, one is what would be the status of a provincially regulated telephone company as a mobile satellite service provider? A second question is whether more than one MSTS carrier could be viable.

While the market is likely to be small, it is not obvious that the user will benefit by either a Telesat monopoly or a telephone company monopoly. For example, if the telephone companies were to apply terrestrial distance-based rates to MSAT service users, arbitrary cross subsidies could arise.

Second, while it may be convenient to consider the three scenarios without regard to jurisdiction, as the Department suggests, it is difficult to see what useful purpose this serves. Ontario has expressed concern on a number of occasions about the problems associated with the regulatory jurisdictional patchwork of Canadian telecommunications. Mobile satellite services would appear to be inherently interprovincial in nature. Furthermore, Scenario II would be inordinately complex to regulate under both provincial and federal jurisdictions.

From the point of view of practicality of regulation it should be envisaged that only a company subject to Federal jurisdiction and CRTC authority should be able to apply to provide Mobile Satellite Telephone Service.

Ontario recommends that the federal government adopt Scenario III as the preferred scenario, and that the CRTC have the responsibility to determine which carrier or carriers may compete to provide service with Telesat Canada.

6. Mobile Satellite Remote Telephone Service (MSRTS)

The Department has recognized a possible market for remote telephone service via MSAT and has proposed not to prohibit the use of the MSAT satellite to provide basic conventional domestic telephone services, as an interim measure.

It is further proposed that the use of MSAT to provide remote telephone service should be restricted to Telesat or to the local telephone companies.

The possible market for MSRTS in underserved areas includes remote camps, provincial and federal parks, isolated dwellings, remote farms and unserved Northern communities. From Ontario's point of view the needs of remote communities in Northern Ontario are especially important. In most of these communities terrestrially based services are unlikely to become economic in the foreseeable future. The solutions which are preferred are not "interim" in nature but permanent - at least until such time as superior technology might become available. In addition, it must also be taken into account that the quality and reliability of service with satellite is likely to be significantly superior to conventional radio telephone.

Given these considerations, Ontario recommends that mobile satellite remote telephone service be recognized as an alternative that is preferrable in some circumstances to conventional terrestrial radio. Terrestrial service in remote areas should only be considered preferrable where the economics and quality of terrestrial service are clearly advantageous.

It is also recommended that both Telesat and the telephone company be allowed to provide service.

7. Other Mobile Satellite Services

In addition to the services discussed above, it is likely that a number of other possible services may prove to be sufficiently attractive to users to encourage carriers to provide them, for example, nationwide paging service, data acquisition and control service, and data transmission service.

The Department recognizes that these other services are neither readily defined, nor is the demand for such services easy to forecast, in view of the long lead times.

Some of the services may be provided effectively on 6/4 GHz band satellite - such as the data transmission service provided in the United States by Equatorial Communications.

It is, therefore, difficult to comment in any detailed way on the basis of existing information about appropriate terms and conditions. First, however, it is evident that there should be consideration of the utilization of existing satellite capacity for some of these services, now, rather than at some undefined future date, because of the current considerable surplus capacity. Second, there is no prima facie case for any particular restriction on the commercial use of MSAT for these services.

8. The Economic Viability of MSAT

The economic and financial viability of MSAT as a commercial operation has not been raised by the Department of Communications as an issue for comment in the Notice. Nevertheless, various parties have expressed concern about the cost of the MSAT project, the market penetration likely to be achieved by MSAT services, and the anticipated profitability of MSAT.

There are several concerns which have not been completely allayed by the available evidence. First, there are a large differences between the most optimistic demand scenario, the base case developed by Telesat, and the pessimistic scenario. Under the pessimistic scenario, according to Telesat, provision of MSAT services with a stand alone Canadian system has been projected to require a subsidy with a net present value of more than $200 million.

Second, while Telesat has been selected as the "lead agency" for MSAT, possibly to emphasize the commercial nature of the venture, it is not clear that Telesat is in a financial position to take the substantial business risk, in addition to the risk of its existing businesses, because of existing excess capacity. That being the case, it is likely that a financial commitment by the Department of Communications would be necessary to allow the MSAT project to go forward. In effect, the business risk would be borne by the government.

Third, the sensitivity analysis performed by Telesat indicates that a Canada - U.S. system is considerably more likely to be profitable than a Canadian stand alone system. It would appear, therefore, that maximum

cooperation possible between Canadian and American satellite operators and authorities would be desirable. This could be usefully directed towards common procurement, common standards for user equipment and the international sharing of satellite capacity and spectrum.

Fourth, the evidence which Telesat has made available about its business plan is somewhat sketchy. For example, Telesat claims that the demand for MSAT services is quite price inelastic at $1.50 per minute. The evidence to support the claim, however, is not presented for what is a somewhat surprising conclusion, given the high level of the proposed charge relative to other telecommunications charges. Second, the Telesat plans give little indication of how the services would be marketed. Finally, since the second generation satellite would likely have a much lower cost per channel than the first generation satellite, the most profitable price for the second generation might be lower than $1.50 per minute for service. There is no discussion, however, in the Telesat, document of alternative pricing arrangements. Given that the market penetration by MSAT is an important area of uncertainty affecting the ability to project a profitable outcome for MSAT services, the lack of detail in these areas does not inspire confidence.

The feasibility studies by Telesat have so far considered several alternative satellite configurations.[3] In addition, Telesat has indicated an interest in the possiblity of development of hybrid C/Ku band satellites to reduce the risks associated with satellite planning. The Department may also find that it is useful to consider whether a hybrid satellite in the first generation might offer lower financial risks.

Ontario recommends that Telesat Canada should provide an adequate business plan which specifies in detail:

- the company's marketing plan
- the reasonableness of the expectation of an effective cooperative arrangement with a U.S. carrier to share capacity
- the service pricing policy over the 1st and 2nd generation satellites
- the nature and extent of any federal financial guarantee or support required

3. "Assessment of the Comercial Viability of a Satellite Based Mobile Communications System in Canada" DSS contract: OISM 36100-2-4372.

SUMMARY OF RECOMMENDATIONS

The Use of MSAT for Non-Mobile and "Emergency" Services

Ontario would be best served by an effective commercial system. Because of the commercial risk inherent in the project, it is not clear that the priorities for the use of MSAT for Non-Mobile and "Emergency" Services, suggested by the Department in its Discussion Paper are in Ontario's interest.

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It is also recommended that the Department consider the potential for encouraging the growth of competitive radio common carriers via integrated satellite-terrestrial mobile radio services.

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Both Telesat and the authorized telephone company should be allowed to provide service.

The Economic Viability of MSAT

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